REMARKS

The Applicant respectfully requests further examination and consideration in view of the amendments above and the arguments set forth fully below. Prior to this Office Action, Claims 1-39 were pending in this application. Within the Office Action, Claims 1-39 are rejected. By the above amendments, Claims 1, 2, 7, 8, 10-15, 18, 20, 21, 23-28, 31, 33-35, and 36-39 are amended. Accordingly, Claims 1-39 are currently pending in this application.

Rejections Under 35 U.S.C. § 112

Within the Office Action, Claims 11-13, 24-26, 35, and 37-39 are rejected under 35 U.S. C. 112, second paragraph, as being indefinite. Specifically, it is stated that Claims 12, 25, and 38 include the claim language "another collision" and "again split" without first introducing a first collision or a split in the subgroup. By the above amendments, Claim 10 is amended to include "a collision between two user signals occurs". Since Claim 12 ultimately depends on Claim 10, proper antecedent basis now exists for "another collision" in Claim 12. Also, Claim 12 is amended to depend on Claim 11. Claim 11 includes "a subgroup x will be split". Accordingly, proper antecedent basis now exists for "again split" in Claim 12. Claims 23 and 24 are similarly amended as Claims 11 and 12, respectively, and Claims 36 and 37 are also similarly amended as Claims 11 and 12, respectively. Accordingly, proper antecedent basis now exists for "another collision" and "again split" in Claims 25 and 38.

It is stated within the Office Action that "the subgroup x" in Claims 11, 24, and 37 lacks antecedent basis. By the above amendments, Claims 11, 24, and 37 are amended to replace "the subgroup x" with "a subgroup x".

It is stated within the Office Action that "the parent group" in Claims 11, 24, and 37 lacks antecedent basis. By the above amendments, Claims 11, 24, and 37 are amended to replace "the parent group" with "the subgroup x".

It is stated within the Office Action that "the subgroup" in Claims 12, 25, and 38 lacks antecedent basis. By the above amendments, Claims 12, 25, and 38 are amended to replace "the subgroup" with "the one smaller subgroup", and the claim dependency of each of the Claims 12, 25, and 38 are changed to Claims 11, 24, and 37, respectively, which include the proper antecedent basis.

It is stated in the Office Action that "the multiple access cycle" in Claims 13, 26, and 39 lacks antecedent basis. By the above amendments, Claims 13, 26, and 39 are amended to replace "the multiple access cycle" with "a multiple access cycle".

It is stated in the Office Action that "the seamless transition" in Claim 35 lacks antecedent basis. By the above amendments, Claim 35 is amended to replace "the seamless transition" to "a seamless transition".

Rejections Under 35 U.S.C. § 102

Within the Office Action, Claims 1, 14, and 27 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,198,728 to Hulyalkar et al. (hereinafter "Hulyalkar"). The Applicant respectfully traverses these rejections.

Hulyalkar teaches a method for controlling the access to the communications medium within a wireless network protocol. A Control Data Frame (CDF) is used to transmit control and data information between a base station and a wireless terminal. A generalized slot allocation policy supports nominal bandwidth allocation for each terminal, and a Buffer Overflow Control policy allows for reallocation of bandwidth for bursts of packets. Each terminal negotiates a nominal level of service and the base station will allocate the available data slots to the individual terminals. The base station informs all the wireless terminals of this allocation in the Base Station Signaling period 310 of the CDF. Inactive terminals can use an Alert period 340 within the CDF to request active status. For example, in the signaling period 310, the base station can announce a terminal identifier, from among a list of currently inactive terminals. If the identified terminal needs active status, it will transmit a signal in the Alert period 340. If such an Alert signal is present, the base station will allocate one or more uplink slots to this terminal in the next CDF (Hulyalkar, col. 6, line 65 to col. 7, line 8). In this alert polling scenario, each individual, non-active terminal is polled in a round-robin fashion. Hulyalkar does not teach that terminals are divided into subgroups, and that each subgroup is polled.

Hulyalkar also teaches that a contention scheme can be utilized using the Alert period 340. In such a contention scheme, any terminal needing to signal an alert request would transmit an identifier during the Alert period 340, and the base station would allocate one or more slots for this terminal in the next CDF. If a collision occurs, and the terminal identifier is not received by the base station, then the absence of an allocation in the next CDF will notify the requesting terminal that another alert request should be generated in the next Alert period 340 (Hulyalkar,

col. 7, lines 34-44). Hulyalkar does not teach altering the allocation process when a collision occurs. Specifically, since Hulyalkar dos not teach assigning terminal into subgroups, Hulyalkar does not teach dividing the subgroups when a collision is detected. Further, Hulyalkar does not teach continuously dividing the subgroups until no collisions occur.

In contrast to the teachings of Hulyalkar, the present invention teaches a polling mode, a contention mode, and a seamless transition between the polling and contention modes to coordinate user transmissions. Each of a plurality of users is assigned an address from a pool of available addresses. The users are then split into subgroups and only users belonging to a specific subgroup at any transmission opportunity are allowed to transmit. In other words, each of the subgroups is polled, and during the transmission opportunity for the specific subgroup, each of the users assigned to the specific subgroup can request to transmit, as in a contention mode. If a collision occurs within the specific subgroup, the specific subgroup is split into smaller subgroups. The smaller subgroups will continue to split until no collisions occur.

The amended independent Claim 1 is directed to a method of coordinating slotted multiple access in a wireless network channel shared by a plurality of users. The method comprises the steps of <u>assigning each of a plurality of users into a subgroup, thereby forming one or more subgroups of users, wherein each subgroup utilizes a contention mode,</u> utilizing a polling mode <u>to provide each subgroup a transmission opportunity,</u> and utilizing a seamless transition between the polling and contention modes <u>such that when a specific subgroup is provided a transmission opportunity and a collision occurs between user signals within the specific subgroup, the specific subgroup is split into smaller subgroups, each smaller subgroup including a portion of the users within the specific subgroup</u>. As discussed above, Hulyalkar does not teach assigning users into subgroups where each subgroup utilizes a contention mode. Further, Hulyalkar does not teach a polling method directed to subgroups. Still further, Hulyalkar does not teach subdividing a particular subgroup into smaller subgroups if collisions are detected in the particular subgroup. For at least these reasons, the independent Claim 1 is allowable over Hulyalkar.

The amended independent Claim 14 is directed to an apparatus for coordinating slotted multiple access in a wireless network channel shared by a plurality of users. The apparatus comprises <u>means for assigning each on of a plurality of users into a subgroup, thereby forming one or more subgroups of users,</u> means for implementing a polling mode <u>to provide each subgroup a transmission opportunity,</u> means for implementing a contention mode <u>within each subgroup,</u> and means for providing a seamless transition between the polling and contention

modes <u>such that when a specific subgroup is provided a transmission opportunity and a collision</u> <u>occurs between user signals within the specific subgroup, the specific subgroup is split into</u> <u>smaller subgroups, each smaller subgroup including a portion of the users within the specific</u> <u>subgroup.</u>. As discussed above, Hulyalkar does not teach assigning users into subgroups where each subgroup utilizes a contention mode. Further, Hulyalkar does not teach a polling method directed to subgroups. Still further, Hulyalkar does not teach subdividing a particular subgroup into smaller subgroups if collisions are detected in the particular subgroup. For at least these reasons, the independent Claim 14 is allowable over Hulyalkar.

Amended independent Claim 27 is directed to an apparatus for coordinating slotted multiple access in a wireless network channel shared by a plurality of users. The apparatus comprises an ATM cube for operating a high speed wireless network consisting of a plurality of horizontal and vertical management layers, a hub for transmitting and receiving wireless network signals such that the hub may receive requests and assign portions of a communication bandwidth, and a plurality of end user nodes for transmitting and receiving wireless network signals such that a plurality of users may request or be granted a portion of the communication bandwidth<u>, wherein the hub assigns each one of the plurality of users into a subgroup that utilizes</u> <u>a contention mode, and when a specific subgroup is provided a transmission opportunity</u> <u>according to a polling mode and a collision occurs between user signals within the specific</u> <u>subgroup, the hub splits the specific subgroup into smaller subgroups, each smaller subgroup</u> <u>including a portion of the users within the specific subgroup.</u> As discussed above, Hulyalkar does not teach assigning users into subgroups where each subgroup utilizes a contention mode. Further, Hulyalkar does not teach a polling method directed to subgroups. Still further, Hulyalkar does not teach subdividing a particular subgroup into smaller subgroups if collisions are detected in the particular subgroup. For at least these reasons, the independent Claim 27 is allowable over Hulyalkar.

Rejections Under 35 U.S.C. § 103

Within the Office Action, Claims 2-9, 15-22, and 28-35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hulyalkar in view of U.S. Patent No. 4,071,908 to Brophy et al. (hereinafter "Brophy"). The Applicant respectfully traverses these rejections.

Claims 2-9 are dependent on independent Claim 1. Claims 15-22 are dependent on independent Claim 14. Claims 28-35 are dependent on independent Claim 27. As stated above,

Claims 1, 14, and 27 are in a condition for allowance. Accordingly, Claims 2-9, 15-22, and 28-35 are also in a condition for allowance.

Within the Office Action, Claims 10-13, 23-26, and 36-39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hulyalkar in view of U.S. Patent No. 5,892,769 to Lee. The Applicant respectfully traverses these rejections.

Claims 10-13 are dependent on independent Claim 1. Claims 23-26 are dependent on independent Claim 14. Claims 36-39 are dependent on independent Claim 27. As stated above, Claims 1, 14, and 27 are in a condition for allowance. Accordingly, Claims 10-13, 23-26, and 36-39 are also in a condition for allowance.

For the reasons given above, Applicant respectfully submits that the claims are in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

HAVERSTOCK & OWENS LLP

Dated: 2-20-04

By: Thomas B. Haverstock

Thomas B. Haverstock
Reg. No.: 32,571
Attorney for Applicant